

# EXHIBIT 3

In re  
Walters, et al v. Flint, et al  
v.  
VNA and LAN  
17-cv-10164  
*Bellwether 3*

Rebuttal Report of Dr. Larry L. Russell

September 19, 2023

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## **1 Preface**

The marked discrepancies between the Veolia expert reports are too numerous to elucidate in this document, and therefore I will not do so. However, I reserve the right to comment on these discrepancies during my direct testimony at trial. This report is intended primarily to respond to new sections of the expert reports submitted for the Bellwether Three matter. As I have already responded to the majority of the content of these reports in the Class matter, I will not repeat those responses here and incorporate my previous reports by reference from both the Class and Bellwether Three matters. An overview of, and response to, the new content in the four reports by Professor Gagnon, Dr. Crowe, Professor Masters and Professor Bellamy is presented in the following section. The Appendix to this report contains additional responses to specific issues contained within those reports.

## **2 Professor Gagnon expert report dated July 26, 2023**

The Bellwether Three report by Professor Gagon, dated July 26, 2023 is largely similar to 2021 report and February 2023 supplemental report by Professor Gagnon in the Class. As I have already responded to those reports, the responses to those sections will not be repeated in this document, but are incorporated by reference into this document.

Professor Gagnon's positions primarily rely on three arguments to support his position:

- 1) The FAST Start lateral replacement data
- 2) The flawed biosolids analysis performed Roy et al.
- 3) The role of Natural Organic Matter (NOM)

Similar to his previous reports, Professor Gagnon continues to present an alternative reality related to the actual events in Flint. The city-wide FAST data does not have meaningful insights into the Bellwether Three matter. It does, however, establish that lead lateral are common throughout homes in Flint. The presence of lead in the water is not only caused by lead laterals, but also high lead solder and high lead brass fixtures which are common throughout Flint. The people who resided in the Bellwether Three homes were likely to be exposed to lead released during the FWC from both lead laterals (at residences, schools, and business), and from leaded solder and high lead fixtures (at residences, schools, and business). Veolia played a critical role in Flint as the water quality expert during their tenure.

Professor Gagon continues to rely on the flawed biosolids work performed by Roy et al. I have repeatedly presented how this work is fundamentally flawed and should not, and cannot, be relied upon as a basis for justify the actions of Veolia in Flint. That explanation will not be repeated here.

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Professor Gagnon continues to present an alternative reality where Veolia was somehow justified in their water treatment recommendations based on factors for which there is no record that Veolia ever took into account. Further there is no reason to believe that Veolia had any understanding of this possible issue, nor has it been documented as an issue by the extensive publications on the Flint Water Crisis. Simply put, the NOM issues is a red herring attempting to divert attention away from Veolia's true intentions and failures in Flint.

As exemplified by the concluding statements in Professor Gagnon's report, his work is either careless or disingenuous. He states that in his Bellwether Three report that "[he] provide[s] the foregoing opinions in support of the VNA Defendants' Opposition to the Plaintiffs' Motion for Class Certification" (Gagnon BW3 2023, p. 49). It is unclear why the Class Certification plays such a significant role in Professor Gagnon analysis of the Bellwether Three matters.

In no way does the minimal amount of new content which Professor Gagnon has added to this report change my opinions, nor does it offer any meaningful or relevant rebuttal to my previous reports and responses.

### **3 Dr. Crowe expert report dated July 26, 2023**

Dr. Crowe has updated the format and structure of his expert report for the Bellwether Three matter, but has largely failed to offer new or meaningful opinions, and the opinions offered continue to lack a basis in science and engineering. Dr. Crowe continues to criticize the work I performed removing pipe samples as part of the Class matter, yet fails to have performed any work of his own, and continues to rely upon inaccurate and inappropriate methods of analysis that do not meet even minimal acceptable standards in the industry. Generally, the issues Dr. Crowe attempts to raise are red herrings and he fails to offer meaningful and supported opinions. Dr. Crowe attempts, and fails, to support his position regarding copper corrosion in Flint by grossly misapplying model developed by EPA's Dr. Lytle's. In doing so, Dr. Crowe clearly demonstrates his lack of understanding regarding what occurred in Flint, and regarding corrosion science in general.

While Dr. Crowe's Bellwether 3 report contains restructured and some new content, that content in no way change my opinions, nor does it offer any meaningful or relevant rebuttal to my previous reports and responses.

### **4 Professor Masters expert report dated July 26, 2023**

The Bellwether Three report by Professor Masters, dated July 26, 2023 is largely similar to February 2023 report by Professor Masters in the Class. As I have already responded to that report, the responses to those sections will not be repeated in this document, but are incorporated by reference into this document.

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Professor Masters continue to ignore Veolia's actual work product and presentations, and instead focuses his efforts on the actions of other parties. Veolia was the water quality expert that was hired to assist Flint with their water quality issues, yet Professor Masters ignores what Veolia did do, and more importantly, failed to do while working in Flint. Professor Masters tries to walk in impossible line in which Veolia both relied on the Lead and Copper Rule (LCR) sampling data, yet should have known that it was deeply flawed. Professor Master continues to rely on the flawed biosolids work performed by Roy et al., thereby undermining his arguments. Further, Professor Masters tries to justify Veolia's actions with regards to the lead data collected at University of Michigan, yet fails again to actual evaluate what Veolia reviewed and did with that information. Professor Masters again attempts to obscure Veolia's actions by relying on peer reviewed literature that was done after the FWC, which is not relevant to evaluating Veolia's actions at the time they were the water quality experts for the City of Flint.

In reading Professor Masters Bellwether Three report, one might think that Veolia had no role whatever in Flint. However, Veolia did have a critical role in Flint, and Veolia failed to avert or substantially mitigate the Flint Water Crisis during their tenure in Flint. As stated previously, Professor Masters report is largely a repeat of his previous expert reports, and continues to portray the same unrealist view of the actual events in Flint and Veolia's role.

In no way does the minimal amount of new content which Professor Masters has added to this report change my opinions, nor does it offer any meaningful or relevant rebuttal to my previous reports and responses.

## **5 Professor Bellamy Expert Report dated July 26, 2023**

The Bellwether Three report by Professor Bellamy, dated July 26, 2023 is largely similar to February 2023 and January 2021 reports by Professor Bellamy in the Class. As I have already responded to those reports, the responses to those sections will not be repeated in this document, but are incorporated by reference into this document.

Professor Bellamy again fails in his attempts to rewrite history regarding in Veolia's role in Flint and similarly fails in his attempts to justify his position that Veolia met the standard of care with their work. Professor Bellamy is careless and inaccurate regarding the requirements of the Safe Drinking Water Act and uses those careless omission of the requirements to justify Veolia's work in Flint. In no way does the minimal amount of new content which Professor Bellamy has added to this report change my opinions, nor does it offer any meaningful or relevant rebuttal to my previous reports and responses.

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## **6 Additional Materials Reviewed**

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City of Flint Michigan, 2022. *Progress Report on Flint Water.* Accessed online via Wayback Machine.

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EGLE, 2020a. *Finding of No Significant Impact: City of Clint Wastewater System Improvements Clean Water State Revolving Fund Project No. 5696-01.* April 29, 2020.

EGLE 2020b. *Flint enters final phase of lead service line replacement.* EGLE Media Office, September 30, 2022.

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Gagnon, G., 2023. *Expert Report of Graham Gagnon, Ph.D., P.Eng., Bellwether 3 Trial.* July 26, 2023.

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Isaac, R.A. et al. 1997. *Corrosion in Drinking Water Distribution Systems: A Major Contributor of Copper and Lead to Wastewaters and Effluents.* Environ. Sci. Technol. 1997, 31,3198-3203.

Masters, S., 2023. *Expert Report of Sheldon V. Masters, Ph.D., Bellwether 3.* July 26<sup>th</sup>, 2023.

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Roy, S. 2018a. Emails. VATECH 00069855-00069857.

Roy, S. 2018b. Emails. VATECH 00139456-00139462.

Roy, S. 2018c. Emails. VATECH 00139622-00139627.

Roy, S. 2018d. Draft memo to Environmental Science and Technology Letters. VATECH 00168116-00168118.

Roy, S. 2018e. Emails. 00139609-00139615.

Roy S., Tang. M., and Edwards M. *Supplemental Information: Lead Release During the Flint Michigan Water Crisis is Revealed by routine Biosolids Monitoring Data*. VATECH 00078415-00078423.

Roy S., Tang. M., and Edwards M. *Draft: Lead Release During the Flint, Michigan Water Crisis is Revealed by routine Biosolids Monitoring Data*. VATECH 00139026-00139051.

Roy S., Tang. M., and Edwards M. 2018. *Lead Release During the Flint Michigan Water Crisis is Revealed by routine Biosolids Monitoring Data*. VATECH 00238311-00238328.

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Tang, M., Roy S., and Edwards M. *Lead Release During the Flint Michigan Water Crisis is Revealed by routine Biosolids Monitoring Data*. VATECH 00158323-00158340.

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USEPA, 2021. *Basic Information about Biosolids*. Webpage accessed 2/24/2021. Finley Exhibit 8.

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## 7 Signature

I declare under signature of perjury that the foregoing is true and correct to the best of my knowledge and recollection.

Executed this 19<sup>th</sup> day of September 2023, in Tiburon, CA.

By:   
Larry L. Russell, Ph.D., P.E.

License Number 6201055338

Exp 4/30/2025



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## **8 Appendix to the Russell Rebuttal Report of Dr. Larry L. Russell**

### **8.1 Professor Gagnon expert report dated July 26, 2023**

#### **8.1.1 Biosolids Analysis**

This report mimics the previous Professor Gagnon reports regarding the Flint Water Crisis. However, this time, Professor Gagnon takes an advocacy position in promoting the applicability of biosolids data to the FWC without apparently looking at anything but Professor Edwards et al. papers on biosolids. He appears to have either not been provided my reports, ignored those reports, or failed to read the evaluation made by myself in the Russell reports dated March 29<sup>th</sup>, 2021 and March 3<sup>rd</sup>, 2023. In those reports I quantitatively establish that the biosolids analysis by Roy et al. (Roy, Tang and Edwards 2019, Roy and Edwards 2020, and Roy Declaration February 2023) is fundamentally flawed and is not appropriate to be utilized by the experts for Veolia. As explained at length in my previous reports, there are a variety of flaws in those analyses, including that the Flint sewage collection system is effectively a combined sewer system (regardless of what it has been classified as). A combined sewer system is one that conveys both wastewater and stormwater in a single sewer system, as opposed to having separate sewers in which there is one collection system for the stormwater and separate collection system for the wastewater. The Flint sewer system is heavily influenced by storm water. Additionally, stormwater flow is a controlling factor in the lead transport and incorporation in the biosolids in the Flint sewers based on my analysis of the same data used by Roy et al. Accordingly, the presence of significant amounts of flow and transport in the sewer system due to stormwater runoff, invalidates the model and any conclusions made by Roy et al. and similarly invalidates any experts' opinions relying on Roy's work.

An example of the proof that the Flint sewers operate effectively as combined sewers is found in a response to an email from Professor Edwards on October 30<sup>th</sup>, 2017 (VATECH\_00001830), wherein the Average Dry Weather Flow for the second community using the Flint system is stated to be 13 mgd [million gallons per day] and the peak wet weather flow “goes to 50+ mgd” resulting in a ratio of wet weather flow to dry weather flow that indicates that the Flint system operates as a combined sewer system. Similarly, in 2020 the Environment, Great Lakes and Energy Department (EGLE) noted that the Flint Wastewater Treatment Plant treated an annual average daily for 20 mgd, yet “[w]et weather events can increase flow to the [treatment plant] in excess of 70 MGD” (EGLE 2020, p. 2). A truly non-combined sewer system will have seasonal ratios below these levels (Rashid and Liu, 2020).

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In another email Professor Edwards asks if the Flint sewer system is combined and his question goes unanswered. (VATECH\_00001831- VATECH\_00001832). However, several other issues are clearly answered in Professor Edward's emails, which are that there are more than two cities that share the Flint sewage collection and treatment system and that there are several industries that discharge lead to the Flint sewage system (these anomalies were not addressed in the Roy-Edwards model).

The following cities discharge into the Flint sewage system for treatment and discharge (EGLE 2020, p. 1):

- Flint
- Burton
- and parts of Flint Township, Genesee Township and Mount Morris Township

The failure to account for these sewage discharges is a critical flaw in the Roy model. The model employed by Roy failed to account for other sources of lead, and failed to account to the fact that areas not impacted by the water quality changes during the FWC also discharged into the sewer system. Additionally, in email (VATECH\_00078415) Table S1 clearly shows that the Edwards team doesn't believe that the lead impacts from the 2011 biosolids lead spike was due to water quality changes – even though their paper (Roy et al.) states that it did.

Professor Gagnon reports on his assessment of the biosolids usefulness as a monitor of the lead production in Flint during the Flint Water Crisis by stating that “*Further, the biosolids suggest that Flint had a high lead concentration in several years prior to 2014*” (Gagnon 2023, p. 48). While on its face this statement aligns with the available biosolids lead data, even a cursory review of my analysis would have clearly shown him that the cause of lead spike data before 2014 was excessive rainfall resulting in lead transport in the Flint sewers. This reality was either ignored by and/or not understood by Professor Gagnon. The continuation of Professor Gagnon's advocacy in this matter is disconcerting. The flawed nature of the Roy et al. analysis is discussed at length in my previous reports, and has also been discussed in the Rebuttal Report by Dr. Weisel, yet has not been addressed by the Veolia Experts in these rebuttal reports, including Professor Gagnon's report.

There are a variety of additional issues that should have concerned Professor Gagnon regarding the use of the Roy data, assumptions, and conclusions including:

- 1) Professor Edwards questions his own understanding of the lead biosolids data in his email dated 10/28/17 (Edwards 2017, Finley 11)
- 2) Roy et al failed to address the impact of industrial waste contributions on the lead mass balance in the Flint biosolids (US District Court 2021/Finley 9 &10, Previous Russell reports)

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- 3) Communities outside of Flint are clearly providing wastewater to the Flint Wastewater Treatment Plant (VATECH\_00001830, EGLE 2020), and those communities contribute to the biosolids. These other communities contributing to the biosolids are neither identified nor noted in the Roy et al papers. Based on email exchanges between Professor Edwards Robert Bincsick, the flows contributed from outside of Flint are significant with respect to the total treated volume (VATECH 00001830). It is not clear if the second community mirrors Flint with respect to its water supply or in the use of lead laterals and high lead faucets and solder, and Roy has provided no attempt to acknowledge the contributions from these other sources outside of Flint which are essential to analyzing the biosolids data.
- 4) Professor Edwards remarked that Roy needed to identify the assumptions being made to develop the lead biosolids model and demonstrate that the assumptions were met (VATECH\_00069856). However, reading the Roy et al. papers clearly indicates that these critical steps to identify each assumption and verify that the model continues to hold under those conditions was clearly not completed. Also, one of the data points listed is that in a Massachusetts study only 50 percent of the lead in the sewage came from lead corrosion of distribution devices in the drinking water system (the reference does not postulate on where the other 50 percent came from Issac ES&T 1997 31:3198-3203)
- 5) As can be seen in the draft version of the Roy et al. work (VATECH\_00139025 and VATECH\_00139026), correlations presented in the final work did not hold when utilizing the 138 homes with complete sampling data from the Virginia Tech sampling efforts.

### **8.1.2 Lead in the Plumbing Systems**

There are many sources of lead in the plumbing systems in Flint. These sources vary depending on the materials used in the construction of the system. Regarding the laterals, I have reviewed the FAST program data (the same reviewed and relied on by Professor Gagnon) and it clearly demonstrates that a significant number of homes (way too many homes) had service lines that required removal (over 10,000) in the City of Flint. I have also reviewed the home inspection data which indicates that many homes have high lead in their water faucets and plumbing components.

The important point to understand about the houses in Flint regarding lead contamination and lead sources is that all of the houses in Flint have high lead fixtures and high lead solder (for those houses plumbed in copper) that would be illegal to install today due to the excessive lead content in those components. Lead is a potential issue in all homes, not just in those with a lead service lateral, and that fact remains true for business and schools throughout Flint as well. Therefore, the question of if the home had a lead service lateral is a secondary issue with respect

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to lead exposure and the health of the residents during the Flint Water Crisis. While it is true that there is an additional lead sources in houses with lead service laterals, it is even more true that all of the houses have increased lead exposure in their drinking water due to these high lead content faucets and the high lead content solder used in the homes plumbed with copper pipe. These sources of lead were critical sources of lead impacting the drinking water during the FWC. Additionally, this 100 percent exposure (all houses) to leaded materials in the plumbing systems is another reason that orthophosphate corrosion inhibitors should have been added at the Flint Water Treatment Plant while the treated Flint River water was being distributed, and it is why it was below the standard of care for Veolia not to have recommended doing exactly that.

As discussed in my previous reports, the presence of these lead components in the plumbing systems is especially concerning when they are exposed to water with highly corrosive tendencies, as occurred during the FWC. During the FWC, the Chloride Sulfate Mass Ratio (CSMR) was high. A high CSMR indicates that the galvanic corrosion of lead will be maximized and that substantial dissolution of lead from the faucets and other high lead components including solder will occur. While the CSMR is not demonstrative that corrosion resulting in the release of lead into the drinking water will occur, it is indicative of that phenomenon and should have provided a clear red flag to the Veolia engineers regarding the potential for accelerated lead corrosion. Additionally troubling is the fact that Professor Gagnon fails to acknowledge that having a high CSMR is indicative of creating conditions that will support the corrosion of lead where the lead source is in contact with the drinking water, the CSMR is simple and quick to calculate, and it provides more information by far with respect to lead corrosivity than the Langelier Index calculations made by Mr. Gnagy, the Veolia engineer in charge of their work in Flint.

Of course I recognize that lead service laterals are an important source of lead in drinking water. In fact, I filed for and received patents (USP 6,103,097 and 6,423,208) on protecting drinking water that is exposed to lead pipes. One only has to recall the fate of the Romans who routinely drank from lead pipes, used lead cooking ware, and used lead as a food additive to understand the problems of having too much lead in our drinking water piping, plumbing fixtures, and in our bodies. The issue regarding the presence of lead service laterals was demonstrated by the FAST program which showed that there were substantial numbers of them throughout Flint as over 10,000 had to be removed. However, as discussed above, the lead laterals are not the only source of lead and homes without lead laterals were also subject to the release of lead from other plumbing components during the FWC. As of September 2022, the removal of lead service laterals was 95 percent complete, and the City of Flint had excavated 27,428 service laterals and replaced over 10,000 of them (City of Flint, 2023). Accordingly, the percentage of service laterals requiring removal is approximately 37 percent. At the time the data as was reported, there were 1,600 remaining laterals to be excavated which would potentially add at least 500 more service laterals that would be replaced. Together this would indicate that there are over

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10,500 service laterals requiring replacement from the over 29,000 service laterals evaluated through the FAST program. The 17 percent value represented by Professor Gagnon (Gagnon 2023, p. 3) (and relied on by Crowe and Masters) of homes with lead service laterals, clearly understates the findings that nearly 37 percent of the homes had service laterals that required excavation and replacement to remove potential lead sources from the Flint drinking water.

### **8.1.3 Lead and Copper Rule (LCR)**

It is obvious that the historical Lead and Copper Rule (LCR) data is flawed, but it is just as obvious that the disastrous decision to use the Flint River Water as a source of water was as bad a decision as it was a bad decision to allow lead piping to be installed in the first place. Even worse, the Veolia engineers had the opportunity to right the vessel and get Flint on the right course with respect to protecting their residents from high lead exposure. As discussed at length in my previous reports, Veolia engineers blatantly failed to correct these critical issues related to lead and water quality in their role as the City's water quality engineers. It was as simple as the ultimate solution to the Flint Water Crisis, which was to insist that Flint switch back to the DWSD water supply.

Professor Gagnon apparently ignores the fact that in addition to the LCR sampling done in Flint, there is also the sampling done by the Detroit Water and Sewerage Department (DWSD) during the same period of time under Veolia's direction as the DWSD consultant which showed that DWSD was in compliance with the LCR throughout the Flint Water Crisis fiasco. Even if Flint did it wrong, DWSD did it right and that data shows that the orthophosphate treated DWSD water served in Detroit and other communities was in compliance with the LCR requirements. Professor Gagnon continues to indicate that the Health Canada program for lead control has a standard of 5 parts per billion (ppb), without drawing the obvious conclusion that the US EPA should adopt a similar standard (Maximum Contaminant Level [MCL]) of 5 parts per billion (same as Canadian Maximum Acceptable Concentration [MAC] rather than to continue with the Action Levels in the USEPA LCR). Professor Gagnon continues to be concerned with the sampling protocol of the LCR, rather than to focus on the real issue, which is that the LCR doesn't adequately protect the user's health and is subject to misuse.



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#### **8.1.4 Natural Organic Matter (NOM)**

In my previous reports, I have discussed at length the issues surrounding NOM and its role in corrosion and water quality.

There is no question that ferric salts improve the removal on NOM (TOC) when compared with aluminum sulfate (the original coagulant at the Flint Water Treatment Plant used before the 1967 switch to DWSD water), but at what cost to increasing the corrosive nature of the Flint River water? The problem with using ferric chloride is that its use increases the CSMR and the corrosivity of the treated water. The corrosive nature of the water was confirmed by the General Motors engine plant that could not use the Flint River water to build engines because it was too corrosive. If the Veolia recommendation to increase the ferric chloride dose had been accepted by the City it would have made the water even more corrosive (and further increased the CSMR). There is no mention in Veolia reports of considering the use of Ferric Sulfate or Aluminum Sulfate as the water treatment alternative coagulant. Using one of these alternative coagulants would have lowered the CSMR and decreased the corrosivity of the treated Flint River water.

Professor Gagnon's focus on the trihalomethane (THM) issue ignores the fact that the result of excessive THM is a chronic human health issue, while on the other hand ingesting excessive lead causes both acute and chronic human health concerns. The difference between these two contaminants means that drinking water that exceeds the THM maximum contaminant level (MCL) may result in one excess cancer in 1,000,000 users after 70 years of drinking two liters of water per day, while drinking water that exceeds the lead standard can result in both immediate and long-term impacts on human health. The two issues are both important, but the issue of exceeding the lead standard is far more critical to the user's health (especially for children) than is the exceedance of the THM MCL.

Professor Gagnon reported that the presence of the NOM compounds increases lead release and can reduce the effectiveness of orthophosphate as a corrosion inhibitor based on research conducted as early as 2005 (this research should have been available to the LAN engineers during their evaluation of the Flint water system, before the switch to the Flint River water source and which surely should have been available to the Veolia engineers in 2015). The issues highlighted by Professor Gagnon are a concern, but the solution to these problems is not to avoid the use of orthophosphate as a corrosion inhibitor. The potential interference of NOM in corrosion control is not a credible argument against the use of orthophosphate in the Flint River water to reduce the impacts of the corrosive water. Accordingly, any potential interference is no way a potential justification for Veolia's failure to make the recommendation to add orthophosphate as a corrosion inhibitor.



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Further, this position by Professor Gagnon is not supported by the work actually performed by Veolia during the FWC. Nowhere in their reports and presentations is the position taken that NOM was a driver of lead scale release, and nowhere do they take the position, or show any analysis to support that there was in fact a requirement for corrosion control, and that the effectiveness of orthophosphate could be reduced due to the NOM/TOC. This is a “solely for litigation type opinion” not supported by the actual work performed by Veolia. Veolia should have been adamant that the use of the Flint River water was a mistake in the first place and that the Flint water supply should have been switched back to the DWSD water as soon as possible (as was proposed in the internal Veolia emails by Chen). Additionally, Veolia should have been adamant about the absolute need for corrosion control of the treated Flint River water

#### **8.1.5 Advocacy, Misstatements, and Misinterpretations by Professor Gagnon**

Professor Gagnon spends over ten pages attempting to justify various positions taken by Veolia ranging from their neglecting to recommend the addition of orthophosphate to the recommendations to reduce the concentration of TOC. However, Professor Gagnon fails to recognize the most straight forward recommendation that Veolia should have made was to immediately switch back to the DWSD water supply and all of his concerns (plus my concerns regarding the lack of corrosion control and orthophosphate dosing) would have been instantaneously addressed. The proof of this statement is most readily found in the fact that on October 15, 2015 when DWSD water supply was restored to Flint, and then again in December 2015 when the orthophosphate dosage was tripled above pre FWC concentrations. Therefore, even with the superior water quality supplied by (DWSD) the experienced corrosion control experts brought in by the American Water Works Association tripled the orthophosphate dose to increase the speed of healing of the pipe surfaces in the Flint water distribution system and within user’s houses.

Professor Gagnon goes on to state the following:

*“Implementing these recommendations would have allowed for the maintenance of consistent free chlorine residual and would have contributed to the development of a stronger scale, as “distribution systems that have historically maintained high chlorine residuals could have PbO<sub>2</sub> functioning to limit lead release.” (Lytle and Schock, 2005).*

With all due respect, Professor Gagnon cannot state that these recommendations “...would have allowed for the maintenance of consistent free chlorine residual...” . While it is true that implementation of these recommendations would likely have improved the levels of chlorine residual, it is not possible to know *a priori* that these recommendations would allow for consistent chlorine residual. As a result of Professor Gagnon’s advocacy, the truth gets lost in his text due to exaggerations like these.

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However, the most egregious and disingenuous example of Professor Gagnon's advocacy is his misstatement below:

*"Also in Priority #2, the VNA Water Quality Report (March 12, 2015) also stated that "a target dosage of 0.5 mg/L phosphate is suggested for improved corrosion control." The 0.5 mg/L of phosphate recommended by VNA was in alignment with the EPA Guidance Manual where it is stated that "It is very important for most water systems to maintain a residual of at least 0.5 mg/L orthophosphate as phosphate (P) and if, possible a residual of 1 mg/L as P is preferable." (EPA, 2003). Considering the finished water quality in Flint at the time, engineers at VNA selected a concentration dose of 0.5 mg/L of phosphate for improved corrosion control, which would have aligned with the EPA Guidance Manual."*

Veolia recommended dosing polyphosphate not orthophosphate. If the Veolia recommendation had been followed to add polyphosphate at the dose of 0.5 mg/l phosphate, it would have resulted in even higher lead concentrations in the Flint drinking water than were experienced. Professor Gagnon's statement is a non-truthful representation of what Veolia said. I have previously written at length about this issue, and there is absolutely no evidence that Veolia was recommending the use of a corrosion inhibitor such as orthophosphate.

Additionally Professor Gagnon goes on to state the following:

*"...it was found that polyphosphate appeared to sequester lead in drinking water, whereas orthophosphate resulted in an overall reduction in lead release (Trueman et al., 2018)."*

Said another way, adding polyphosphate was bad as it likely increased lead in the water due to sequestration and adding orthophosphate was good. Apparently, Professor Gagnon is attempting to have it both ways for his client. First he misstated what Veolia recommended to attempt to support his point and obscure the truth, and then he proves that what Veolia recommended with respect to phosphates was going to have a negative impact on the drinking water quality with respect to lead solubility.

The sad reality of the truth is found in this statement from his report:

*"...[Veolia] recommended the 'use of corrosion control chemical polyphosphate to minimize colored water from corrosion of unlined cast iron pipe in the Flint distribution system'".* Note that Veolia did not recommend the use of polyphosphate as a corrosion inhibitor, because it is not a corrosion inhibitor. Polyphosphate is merely a masking agent to hide the truth, obscure the presence of heavy metal contaminants, and indeed increase the soluble concentration of those same heavy metals (lead).

His last statement is a mystery and does not belong in the Bellwether 3 expert report:

*"I provide the foregoing opinions in support of the VNA Defendants' Opposition to the Plaintiffs' Motion for Class Certification."*

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The class certification has already occurred and class certification is not related to the Bellwether 3 trial. Either this is an example of sloppy work or a detachment from reality by Professor Gagnon. It should be noted that Professor Gagnon is neither a registered professional engineer in Michigan nor in any state of the United States, which would make it impossible for him to legally practice engineering anywhere in the State of Michigan.

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## **8.2 Dr. Crowe expert report dated July 26, 2023**

### **8.2.1 Credentials**

It should be noted that Dr. Crowe is neither a registered professional engineer in Michigan nor in any state of the United States. Not being registered, makes it illegal for him to practice engineering in the State of Michigan. It is unclear if he has either failed to pass the exams or chose to ignore the law. None of the 13 papers listed on his CV address corrosion in water distribution systems.

### **8.2.2 Pipes Removed in Flint**

Dr. Crowe offers his opinion that the pipe samples removed by me in Flint were improperly stored and/or handled. The method of removal (saw cutting) and the pipe storage and transport was adequate for the purpose of evaluating the pipes to return them to the laboratory in California. The labeling system was adequate to allow for identification of the removed pipe sections and include flow directions, hot and cold indications and each pipe was provided with a unique identifier. All materials removed were personally transported by me from removal through analysis at the laboratory. Dr. Crowe is well aware that there is no standard protocol for the removal and storage of pipe samples. I utilized the same techniques and protocols that I have used hundreds of times, without a single comment or criticism during these over 100 events conducted during the past 45 years, until his attempted criticism.

Dr. Crowe stated the following:

*“After being cut open, the pipes were evidently stored in damp, uncontrolled conditions in Dr. Russell’s garage because the cut surfaces of galvanized steel samples rusted. The internal surfaces of the steel pipes likely corroded further, too”* (Crowe 2023, p. 3)

First of all, the pipes were not stored in a damp condition. Second, while Dr. Crowe chose to criticize my evaluation of the events during the FWC regarding the degradation and dissolution of corrosion/phosphate scale degradation which then exposed the underlying steel surface to accelerated corrosion, he then proposes that the internal surfaces of the steel pipes that I removed from Flint continued to corrode (although they were only exposed to the air and not under water as they were in Flint), while they were stored (which is simply not true). However, the model he proposed that the steel pipe under the scale would continue to corrode, would quantitatively prove that my theory of steel pipe degradation during the FWC was an accurate representation of the corrosion that occurred to steel pipe during the FWC, as the scale was softened and dissolved to expose the subsurface steel to accelerated corrosion.

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Dr. Crowe goes on to say the following:

*“An alternative explanation for lead in the scale of galvanized steel pipe is that it originated from lead carried downstream from lead service lines (LSLs) for the less than 16% of Flint homes that had LSLs prior to the Flint River water period (10, p.6027) (now much reduced by lead line replacement). This lead could have been deposited as lead phosphate through the action of orthophosphate between 1997 and 2014, and then from 2015 to present. Russell claims that lead released from LSLs and other plumbing components was carried into residential piping and deposited. On the other hand, he asserts that the scale and oxides were sloughed off during the event, exposing the pipe to damage, so deposition seems unlikely during that time. These two claims are at odds. The observation of adherent scale in pipe samples, and the absence of evidence of any unusual corrosion supports the idea that lead, if not present from the original galvanizing layer, was deposited over many years. However, due to Russell’s saw-cutting of the samples which likely contaminated the galvanized steel pipe samples with lead (see Opinion 1), we do not even know how much lead was present in the scale in pipe samples.*

Dr. Crowe fails to understand that these are two different phenomena. There is no question that the corrosion scale was dissolved which was evidenced by the highly colored water produced immediately following the switch to the treated Flint River water during the FWC. This dissolved scale is the source of the discolored water (and lead) being distributed in Flint during Veolia’s presence during the FWC. The other phenomenon is that small granular particles of lead were released from the exposure of the lead materials to the corrosive treated Flint River water. Thus it is clear that both of these phenomena occurred simultaneously during the FWC. Dr. Crowe also neglects to address the fact that the pipes I removed had been exposed to DWSD water with triple orthophosphate dosage since December of 2015, and of course what can be seen today is not the same as the pipe surface looked during the FWC.

It is interesting to note that when Dr. Crowe was asked to produce the FAST dataset, he relied on in coming to his conclusions (Crowe 2023, p. 16), he apparently “...does not have a data set to produce in relation to the opinions you referenced.”

Regarding the Chain of Custody which Crowe opines on, I personally worked with TSA to open and inspect the pipes in my container. The sample container was sealed with TSA tape, which remained intact upon arrival in California. The samples were in my possession at all times from collection to analysis.

Dr. Crowe then goes on to talk about the behavior of lead pipes with scale regarding work done by the EPA. Clearly, I never removed any lead pipes from either of the homes I observed, and his comments are irrelevant. Similarly, his concerns about cross contamination resulting cutting and transport of these 30-inch pipe samples are illogical and at best red herrings. The miniscule amount of pipe cuttings generated during pipe cutting fell to the floor rapidly and the potential for cross contamination between the pipes during transport is simply absurd as the pipe ends were separated by several inches during transport by utilizing soft packing material. I have discussed this issue previously in my supplemental report and deposition, and disagree

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wholeheartedly with Dr. Crowe that there are any concerns related to my collection, transport, or analysis of the pipe samples.

Dr. Crowe's position that this data cannot be used to extrapolate to other homes in Flint is flawed at best (and contradicts statements he has made prior). His argument is centered around what can or cannot be observed from the only pipe samples that have been removed from Flint homes and the only pipe samples which are available from Flint. He never asked to evaluate with more than a short visual inspection the pipe sections that were removed and he fails to acknowledge the usefulness of the data collected. The only reason that wet chemistry was utilized to measure the lead levels in the pipe scale was that the lead detection levels of the energy-dispersive X-ray spectroscopy (EDX) were too high to measure the remaining lead levels in these pipe scales. It also appears that the Court has found criticisms of this nature to be fatally flawed. ECF No. 2606, PageID.85734-37.

Dr. Crowe goes on to state the following (referring to me):

*"[Dr. Russell] then simply assumes that the pitting occurred during the Flint River water period, with no proof at all that the weep spots did not predate the Flint River water period. Dr. Russell offers no evidence that any corrosion occurred in 2014-2015."*

The only one making assumptions here is Dr. Crowe. I made no such statement about the weep holes regarding the precise date they were formed. All that I said is that a pipe with a through the wall pit had failed. However, the progression of steel pipe pitting (like those of the weep holes) would have been accelerated by exposure to the highly corrosive water produced and distributed during the FWC.

Dr. Crowe's concept that pipes with through the wall corrosion pitting are not failed is ludicrous. Who would purchase a pipe with holes through the wall in numerous locations even if the holes had been repaired by natural sealing. As an analogy, who would buy a replacement tire that they knew it had a nail hole in it? Additionally, there are surely other pits that have not yet expressed themselves fully through the wall of the pipes at the time that these pipes were removed. Dr. Crowe has ignored the fact that it was **his selection** of these two homes and **his photographs** of the plumbing in the two houses, which led me to select the pipes at one house and a portion at the other house for removal, as his work documented the piping failures caused by exposure to the water distributed in Flint. The fact that the through wall holes have, for the time being, sealed themselves due to evaporation of the leakage is a comically low bar to declare that the pipes are fine, as Dr. Crowe has done. Additionally proving that something did not occur is very difficult if not to impossible to do, whereas proving that an event that has occurred did indeed occur is a trivial task. That is, proving that a through the wall pit has compromised the pipe is a trivial task to accomplish indeed. One only has to look with their own eyes to see the hole.

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### 8.2.3 Copper Pipes in Flint

Dr. Crowe offers this opinion in his expert report:

*“It is believed that the scale observed on the copper pipe was not disturbed during the Flint River water exposure, and that this scale would have protected the copper from corrosion.”*

It offers little relief that Dr. Crowe “believes” that the scale was not disturbed by exposure to the corrosive Flint River water by looking at pipes that have not been exposed to the corrosive Flint River water since October of 2015. Dr. Crowe fails to support his “belief” that the copper was not disturbed, and the analyses he presents utilizing the Lytle 2018 model a gross misapplication of the claimed use of that model. Specifically, Lytle et al. 2018 concludes that their model **“It will enable water treatment facilities to apply a more precisely calculated amount of orthophosphate to meet regional DIC and pH conditions to maintain copper levels below the USEPA-specified AL at worst-case new copper construction sites.”** This model was not developed for the on-off application as Dr. Crowe attempted to do, and Dr. Crowe grossly underestimated the impact of the varying water quality that occurred during the FWC. Using average values is misleading and not representative of the corrosion that was occurring at that time.

Dr. Crowe fails to appreciate the impact of the wild variations experienced in the Flint water distribution system demonstrated by his Figures 3 and 5 (there appears to be no Figure 4 present in the Crowe report). He attempts to make a lame argument that corrosion rates for copper would actually have been less during the Flint Water Crisis. As discussed above, this argument is ridiculous on its face to the point of embarrassment, clearly shows his lack of familiarity with metal materials corrosion in water distribution systems, and relies on misapplication of published work by Lytle. He attempts to demonstrate this with reference to Figure 5 which clearly shows that based on the model he is using, there were likely conditions in which corrosion of the copper systems occurred during the FWC.

Dr. Crowe further demonstrates his lack of appreciation of treated water chemistry with the following statement:

***“Opinion 8 – The corrosion rate of any exposed copper pipe is estimated to have been lower during the Flint River water exposure based on solubility calculations for copper. These lower corrosion rates would have meant decreased release of copper to the water of residents.”***

These statements are simply inaccurate and rely on a misunderstanding and misapplications of a model developed by Lytle et al. 2018.

Dr. Crowe offers more advice as follows:



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*“There is no need to replace copper pipes due to contamination. They will not release lead to residents’ water.”*

Dr. Crowe ignores the fact that the high lead solder exposed to the treated Flint River water (a water with a CSMR of over 2) is a definite source of lead through exposure to high lead faucets and valves with over 80,000 parts per million of lead. The solder in question has a lead concentration of over 500,000 parts per million. Further, Dr. Crowe has offered no basis for his opinions that there was a protective scale covering all solder and preventing the release of lead during the FWC. His statements as such as simply not based in science and are inconsistent with the understandings of modern corrosion engineers.

#### **8.2.4 Galvanized Steel Pipes**

Similar to copper, Dr. Crowe does not appear to understand the way that zinc coating on galvanized pipe actually works. The zinc coating is there to prevent red water formation during the initial period when corrosion of the steel pipe would occur. Then the corrosion control of the water supply system should kick in and take over to provide protection of the steel below the zinc coating (except in cases where the distributed water is highly corrosive, such as what happened during the FWC). The bottom line is that the original zinc coating is long gone by this point in time and any lead present in the pipe scale is from active corrosion and not from contaminants in the zinc coating. In any case, Dr. Crowe could have requested a pipe sample from us to perform his own analysis to address any of his perceived issues with my analysis. However, Dr. Crowe has made no such request, and therefore the only scientifically sound results are those based on the pipes that I collected and the analyses that were performed under my direction.

#### **8.2.5 Lead Sources**

I have reviewed the FAST program data and find that it clearly demonstrates that way too many homes had service lines that required removal (over 10,000) in the City of Flint. I have also reviewed the home inspection data from both the Bellwether Three and Class matters which indicates that many homes have leaded materials in their plumbing systems (this fact is acknowledged by Dr. Crowe and demonstrated by his own measurement on two of the Class houses).



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### 8.3 Professor Masters expert report dated July 26, 2023

#### 8.3.1 Credentials

It should be noted that Dr. Masters is neither a registered professional engineer in Michigan nor in any state of the United States, which would also make it illegal for him to practice engineering in the State of Michigan. He has had ample time to get registered in Colorado (where he has lived for several years), but has either failed to pass the exams or chooses to ignore the law.

#### 8.3.2 Section 1 – MDEQ and EPA

There are significant concerns with the LCR data collected within the City of Flint. There are concerns with sampling concept and with collection of the samples. However, Veolia made no effort to address this issue when they were on site even though they were retained as a “one stop shop” to address water quality issues within the City of Flint. After a substantial amount of document review, it is amazing to me that there is no reference to presence of red water, nor the implication that there was significant corrosion generating that red water, in the water that was being distributed and generated within Flint during Veolia’s tenure in Flint. Concurrently with their time working in Flint, Veolia was also working at DWSD as their consultant under a \$48 MM contract during the DWSD bankruptcy, and should have had full access to the DWSD LCR compliance data.

Dr. Masters states the following [emphasis added]:

*"The culmination of the monitoring and sampling deficiencies identified above resulted in the lead 90<sup>th</sup> percentile in Flint likely being lower than it would have been if the regulatory requirements and EPA guidance were being followed. As a result, elevated lead levels and a 90<sup>th</sup> percentile lead exceedance went unidentified for more than a year, and **compliance results reasonably relied upon by VNA engineers** likely did not provide an accurate picture of lead corrosion in the period July to December 2014. In August 2015, Virginia Tech researchers conducted a system-wide sampling in direct collaboration with Flint residents. The sampling protocol used by Virginia Tech followed standard practices that would increase the likelihood of capturing high lead (i.e., no pre-stagnation flushing, using widemouthed bottles, not establishing a maximum stagnation time). As a result, they were able to capture lead levels that were more reflective of the actual lead release in Flint. Specifically, Virginia Tech's lead 90<sup>th</sup> percentile for samples collected in August was 27.0 ppb compared to 6 ppb and 11.4 ppb in the 2014 and 2015 compliance sampling rounds done by the city, respectively. The Virginia Tech results were significantly higher than the official compliance results despite the fact that Virginia Tech did not target Tier 1 sites."*

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Unfortunately Dr. Master's drew the conclusion (but offers no rationale) for his conclusion that the Veolia engineers could have or did rely on this data set. But if the data set is obviously flawed to Dr. Masters, why wasn't it obviously flawed to the Veolia engineers making them unwilling to rely upon it? Dr. Master's offers no more than the company line when he makes broad unsupported statements like the one above.

While it is easy for Professor Master's to point at the empty chair for the City of Flint, EPA Region V, and the MDEQ, it is not clear if he has any evidence to support his positions regarding their performance other than supposition on his part. He was not there, and has apparently spoken to no one at any of those agencies to fill his knowledge gaps. To further his position, he then refers to the Roy biosolids data, which I have debunked at length previously in my reports from 2021 and 2023, and which we will not be repeated here. Further, as discussed at length in my previous rebuttal report, Professor Masters provides no opinions related to what Veolia did and didn't do in Flint, and he hasn't relied upon any actual written documentation or conversations with Veolia's staff regarding their time in Flint.

### **8.3.3 Section 2 – Lead Time Line**

Professor Masters reported the information below (Masters 2023, BW3; p. 44):

*“the “worst” lead exposure during the FWC[Flint Water Crisis] was restricted to June-August 2014 (captured in biosolids lead mass during July-September 2014), as is further confirmed by the significant elevation in % EBL5 associated with those months.”* They also go on to acknowledge that *“The overall biosolids lead data directly contradicts prior speculation by ourselves and others, that water lead levels and associated exposures, progressively increased during the 18 months of the FWC. Our analysis can also help put the potential exposures occurring during the FWC into context, versus routine USEPA 90th percentile.”*

The problem with this analysis is that it is based on faulty data collected and faulty analysis by Roy et al. He offers no explanation or proof that the June-August 2014 period was the worst. What would make the following 3 months, 6 months, 9 months, 12 months or 18 months better than these three months?

There are many factors that impact the usefulness of the biosolids lead data. First, the Flint sewer system serves another City other than Flint. Second, the Roy assessment does not attempt a mass balance on the system for lead. Third, there is no assessment of the quality or representativeness of the City's lead data. Fourth, there is no adjustment for the contribution of lead from industry. Fifth, the impact of storm water in the Flint sewer system on lead transport. The bottom line is that these listed qualifications make the data difficult, if not impossible, to use for the intended purpose. These flaws have been previously discussed in my reports, and above in this response, and will not be repeated here. The source of this quote is not identified making it hard to confirm.

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*“After January 2018, the lead concentrations in Flint appear to be historically low given that the 90th percentile lead concentration at high-risk sites was between the method reporting limit and 4 ppb. These lead levels are within the range of other large cities with LSLs that are supplied by surface water treated with orthophosphate (Bradley and Horscroft, 2018; DC Water, 2023), including Detroit (90th percentile in 2008, 2011 and 2014 were 4.8 ppb, 3.4, ppb and 2.3 ppb, respectively) prior to the new sampling protocol specified in the MI LCR (Detroit Water and Sewerage Department, 2018).”*

What does this information show? First it shows that DWSD was in compliance with the LCR from 2008 through 2014 (with the same water quality being served in Flint). Second it shows that Flint was in compliance with the LCR in 2018 with the DWSD water being dosed at triple the normal dose of orthophosphate. Professor Master’s does not comment on what the data shows.

### **8.3.4 Section 3 – Lead Occurrence in Large Buildings**

Professor Masters indicated that Veolia had reviewed the data collected by the University of Michigan Flint, but he made no report of what Veolia saw when the reviewed this data. Also, he is clearly not familiar with the information in the Veolia document production, depositions, and the prior trial testimony of Mr. Gnagy. The position taken by Professor Masters is consistent with Professor Masters failing to review what was actually done by Veolia during their time in Flint, and then pontificating on what Veolia did or didn’t do. Professor Masters failed to perform a reasonable engineering analysis based on what Veolia actually knew and what they actually did with that information.

### **8.3.5 Section 4 - December 2020 site visit to inspect the pipes removed from Flint**

Professor Masters performed a brief inspection of the pipe samples, which I collected from two homes in Flint. Professor Masters attempts to compare these to some photos of other pipes from other systems, including one with a blended phosphate system. It should be noted that blended phosphate system is one that includes both orthophosphate and polyphosphate, which is not what was supplied by DWSD. Phosphate blending is a bad idea in general as was discussed under my response to Professor Gagnon’s report.

Professor Masters stated the following in reference to Flint:

*“...Midwest surface water supply that has used blended phosphate for more than 20 years (Wasserstrom et al., 2017)”*

These figures from another water system with different corrosion control methodology and unexplained background and history are not relevant to the pipes in Flint nor to this case and should not be in his report as they are useless and misleading.

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Next, Professor Masters reports that he saw no pipe thinning of the galvanized pipe during the inspection in December 2022 of the pipes I sectioned from the [REDACTED] home except at the threaded ends. He then states the following:

*“Failure at pipe threads typically occurs because cutting the threads during the manufacturing process removes the galvanized iron coating. “*

While it is true that the galvanization is removed on the outside of the pipe during threading, the rest of his statement regarding failure is false. The outside of the pipe is not exposed to water until there is a failure through the pipe wall. Basically what he is saying makes no sense.

He then starts to mix in photos from cities other than Flint for some unexplained reason. Including an elbow from Cincinnati that has a through wall pit. He then states that the [REDACTED] elbow with the pit that I collected does not show the same pattern as the one from Cincinnati. Then he writes the following unsupported statement:

*“Furthermore, most of the corrosion associated with these pipes and fittings occurred prior to 2014.”*

He provides no information or basis for this statement, which appears to be placed in the report to advocate a position being put forward by a third party (his client or their attorneys). In general, Professor Masters provides no meaningful opinions related to my Flint pipes, as I have discussed in my previous reports. His opinions about condition of the pipes lack basis and are unsupported based on observations of the actual pipes. However, this conclusion caps them all as he could not possibly know that corrosion occurred prior to any time other than it occurred prior to the time of collection in 2022.

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#### **8.4 Professor Bellamy Expert Report dated July 26, 2023**

The Expert Report by Professor Bellamy is minimally updated from previous reports produced by Professor Bellamy. I have selected various components of the report to respond to here, including a selection of limited the new material. Each element is assigned a number below and responded to below.

- 1) Dr. Russell claims that a return to DWSD was against VNA's interest because VNA sought to secure additional work*

The point that Professor Bellamy makes is misguided. He ignores issues like the fact that the Business Development manager Mr. Rob Nicholas acted as the project manager for Veolia's Flint work. He ignores the emails within Veolia indicating that they should recommend what was the ultimate solution to the Flint Water Crisis (reconnecting to the DWSD) with orthophosphate corrosion inhibitor. Veolia could surely have used their influence with Flint and with DWSD to assist the City of Flint with their understanding there was no other option. This fact should have been as obvious to Veolia as it was to the American Water Works Association (AWWA) experts who were brought in to end the FWC, and who did so by negotiating reconnection to the DWSD system.

- 2) Dr. Russell claims that VNA put profit ahead of public health protection to secure additional work from the CoF.*

As has been identified in my previous reports, the evidence for my position is clear and I do not intend to repeat it, other than to say how would Professor Bellamy know what Veolia was thinking?

- 3) Dr. Russell claims that the VNA team in Flint should have recommended a return to DWSD because it benefitted DWSD.*

Apparently, Professor Bellamy prefers to work in a vacuum rather than the real world. This recommendation is exactly what Veolia was discussing internally and they were obviously correct as this is exactly what happened when the AWWA stepping in to solve the Flint Water Crisis.

- 4) Dr. Russell claims that VNA should have notified the MDEQ of public health issues associated with the drinking water. The drinking water was compliant with the SDWA water quality standards during VNA's contract period, so there was no need to report to the MDEQ.*

Apparently, as stated previously Professor Bellamy prefers to work in a vacuum rather than the real world. Either he has not reviewed the data or he is betting on his future relationship with Veolia, as his position is simply incorrect. Clearly, the water quality in Flint was a disaster or Flint wouldn't have hired Veolia in the first place as their water quality expert. Flint was serving

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water that was so corrosive it could not be used to **build engines** at the General Motor plant, and he hangs his hat on the basis of meeting the SDWA (which the Flint Water Treatment Plant did not do during the Flint Water Crisis). However, he apparently fails to recognize that the SDWA requires that the distributed water be **generally non-corrosive**. The water distributed during the Flint Water Crisis never met this requirement and therefore was not in compliance with the SDWA. The lay users of the Flint water system recognized with their eyes, their noses, and their taste buds that something was rotten in state of Denmark and that the Flint Water Plant was putting out subpar water under the guidance of LAN and Veolia.

*5) Not adding a phosphate-based control chemical does not constitute inadequate or no corrosion control and has been incorrectly referred to as such.*

As has been discussed at length by me in my previous reports, the treatment of the water from the Flint River was inadequate to meet reasonable and modern corrosion control. Although Professor Bellamy would like to think otherwise, the Flint Water Crisis happened, and the corrosive water distributed during the FWC caused the release of metals including lead into the drinking water.

Characterizing the Flint River water distributed during the FWC as having adequate corrosion control is simply wrong. While it is true that there can be more to corrosion control than adding orthophosphate, it is exceedingly clear that Veolia failed to address, or likely to even understand, the corrosive nature of the Flint River water and failed to prevent or mitigate the FWC.

*6) Simply stated, VNA's scope-of-work was to determine if the Flint Water Treatment Plant (FWTP) and distribution system was capable of treating and distributing Flint River water that was compliant with water quality standards of the Safe Drinking Water Act (SDWA). VNA's effort included operational and treatment evaluations, preparing reports, and making recommendations.*

As I have previously discussed at length in my other reports, both Professor Bellamy and Professor Maters ignore what Veolia stated they would do for Flint in 2015, and what actually happened in 2015 and Veolia's scope as they describe it continues to revolve in ways that suit Veolia's current litigation needs. Simply stated, corrosive water does not meet the SDWA standards. It is inconceivable to think that Professor Bellamy would claim that by evaluating if the Flint Water Treatment Plant could meet the SDWA suggests that somehow Veolia met the standard of care for an engineer. Their scope of work was not to simply evaluate if the system could comply with the SDWA. Keep in mind that statements from a sophist does not make it so.

In reading Professor Bellamy's opinion, you would think that the FWC never happened, and Veolia had no role in as the City's water quality experts. But in fact, the FWC did happen, and it happened during the period when Veolia was hired as their experts to assist the City with the technical expertise the City clearly lacked. As I have discussed previously, Veolia failed to meet the standard of care, and they failed to avert or mitigate the FWC, which they had both the opportunity and responsibility to do.